REMARKS

The Applicants request that the Examiner reconsider the rejection of the present application in the light of the foregoing amendments and the following remarks.

Restriction of the Application

In the official action, the examiner indicated that Claims 40-52 were withdrawn because they were directed to a method that is independent and distinct from the apparatus claimed in Claims 27-39. The applicants traverse this restriction requirement for the following reasons.

Original Claims 16-26 depended from original Claim 1 and were directed to a method of using the apparatus set forth in Claim 1. The examiner never required restriction between the original apparatus and method claims. Apparently, the examiner did not consider Claims 16-26 to be independent and distinct from Claims 1-15 because Claims 16-26 included all of the features of Claim 1. Claims 40 and 48 have been amended to depend from Claims 27 and 35, respectively. Therefore, Claim 40 includes all of the features of Claim 27 and Claim 48 includes all of the features of Claim 35. In view of the amendments to Claims 40 and 48, it is requested that Claims 40-52 be rejoined.

35 USC 103(a): Claims 27, 28, 30, 31, 33, and 34

In the official action, the Examiner rejected Claims 27, 28, 30, 31, 33, and 34 under 35 USC 103(a) as being unpatentable over US 6557492 (Robohm) in view of US 3452966 (Smolski). In making the rejection the examiner stated:

> For claim 27, Robohm teaches an apparatus for storing aquatic animals, comprising a tank (205) for receipt of a plurality of aquatic animals, said tank having an upper portion and a lower portion; and means for delivering foam (310) to the interior of the tank.
>
> However, Robohm lacks to mention [sic] that the means for delivering foam to the interior of the tank [sic] at the upper portion.
>
> Smolski teaches that it is old and well known in the art of animal husbandry to use a means (14,13) for delivering bubble/foam within a body of liquid at the upper portion (see Figure 1). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the apparatus of Robohm so as to included the use of a means for delivering bubble/foam within a body of liquid at the upper portion, in a similar manner as taught in Smolski, so as to promote a better fluid recirculation arrangement.

> Furthermore, it should be noted that a recitation (i.e., "at least a majority of the aquatic animals when stored in the tank are submerged in foam") of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art is capable of performing the intended use, then it meets the claim. Presently, the Robohm reference provides the claimed structure (i.e., a tank having a means for delivering foam to the interior of the tank), and is therefore capable of functioning (i.e., storing aquatic animals within the tank wherein the aquatic animals are submerged in the foam) as claimed.

The applicants' claimed apparatus as set forth in Claim 27 includes "means for delivering foam to the interior of the tank at the upper portion thereof such that at least a majority of the aquatic animals when stored in the tank are submerged in foam." Clearly the claimed apparatus is constructed such that foam will be delivered to the upper air-rich region of the tank so that the animals are stored in foam. In all of the embodiments described in the present application, the apparatus is constructed to deliver foam to the upper air-rich region of the tank. To the extent that the tank contains any liquid, the foam will be above the liquid at the air-liquid interface. However, the claim requires that the apparatus function such that at least a majority of the aquatic animals are submerged in foam.

The applicant's apparatus as claimed in Claim 27, however, does not involve delivering bubbles ***within*** a body of liquid. Rather, foam is delivered to the upper portion of the tank, which is typically air-rich, and over the aquatic animals, well above any air/water interface located towards the bottom of the lower portion. If the upper portion of the tank contained water, a majority of animals would be submerged in a liquid, not in foam as claimed.

Contrary to the examiner's assertions, neither of the systems and methods disclosed in Robohm or Smolski could be used to produce a foam environment. The device described in Robohm is designed to produce maximum ***absorption*** of oxygen in a volume of water or other liquid and to ***minimize*** bubbles reaching the surface. The device described in Robohm performs that function by delivering very small oxygen bubbles to the bottom of the volume of water. The Robohm device requires a mechanical circulator pump that could not function properly in a foam environment. Fully dissolving oxygen in the water is a fundamental goal of the Robohm system. See Robohm at col. 13, lines 37-45 ("distributing the very small pure oxygen bubbles into the water column of the tote. The small bubbles results in a high transfer

efficiency of oxygen gas to ***dissolved oxygen in the water***. Micropore silican [sic] oxygen diffusers are most preferred because they . . . create very small bubbles that do not disturb or excite the fish.")(Emphasis added.) Also, Robohm states at column 14, lines 25-34, "The reduced infusion rate not only reduces the overall amount of oxygen delivered but also generates a less turbulent flow, with much smaller bubbles. The ***smaller bubbles are more easily dissolved in water*** because they have more surface area in contact with water per bubble volume than larger diameter bubbles." (Emphasis added.)

Additionally, Robohm uses an activated charcoal filter. Such a filter would remove organic materials and foaming agents, thereby preventing the formation of foam. The device described in Robohm does not inherently deliver foam to the interior of the tank.

The arrangement described in Smolski is explicitly designed to produce maximum ***absorption*** of air in a body of water or other liquid by breaking up air bubbles with baffles. The solubility of nitrogen in water is significantly less than the solubility of oxygen in water. Air is predominantly nitrogen, and therefore its solubility in water is also significantly less than that of oxygen. In the Smolski arrangement a tube having a helical baffle is used to cause turbulence that breaks up any introduced air bubbles so they can be more readily ***absorbed*** in the body of water (typically a river or lake) to aerate the body of water (Smolski at col. 1, lines 57–62).

In the systems of both Robohm and Smolski, if there is insufficient absorption, bubbles may rise to the surface of a liquid environment through buoyancy. In the case of Robohm that would be an oxygen bubble and in the case of Smolski that would be an oxygen-depleted nitrogen rich bubble. Smolski explicitly teaches that the tube is to be fully submerged in the liquid (see column 2, lines 48–50 and lines 63–64). Even if foam could somehow be produced by submerged systems such as disclosed in Robohm and Smolski, any foam would be formed on the water surface and thus, out of contact with animals sitting or swimming in the water. Bubbles would rise past the submerged animals, but such an approach would not result in the animals being submerged in foam as set forth for the applicants' claimed apparatus. In practice, if one aerates the bottom of a large submerged bed of shellfish, small bubbles are coalesced into large air pockets as the gas passes through the shellfish. The air pocket then

breaks the water surface, escaping, and does not result in a foam matrix.

With the applicants' claimed apparatus, the foam delivering means provides a very highly oxygenated medium for storage of the aquatic animals. Robohm and Smolski respectively require fully dissolving of oxygen or air in water to achieve their respective goals of sufficiently oxygenating or aerating the water.

Essentially, Robohm or Smolski describe an invention to oxygenate (Robohm) or aerate (Smolski) a body of liquid. In contrast, the applicants' claimed apparatus provides a humidified, air-rich environment for the aquatic animals. The applicants' claimed apparatus includes means for delivering foam in the upper portion of the storage tank, so that the animals are submerged in foam. That upper region of the tank is air-rich. If it was not and foam was delivered into water, the animals would not be stored in foam. Neither Robohm nor Smolski describe a method or apparatus for producing foam for storing aquatic animals, nor one that could be used to form an air-rich environment to store at least a majority of animals in the tank in foam.

When a claim for a combination is presented and at least one of the elements is presented as a means for performing a stated function, the examiner must cite a reference or combination of references that discloses or suggests the identical function set forth in the claim in order to make out a *prima facie* case of unpatentability of the claimed combination. In Claim 27 the claimed function is "delivering foam to the interior of the tank at the upper portion thereof such that at least a majority of the aquatic animals when stored in the tank are submerged in foam." The identical function is not expressly described in either Robohm or Smolski. Therefore, it appears that the examiner is relying on a theory of inherency, i.e., that because Robohm and Smolski describe systems that generate bubbles in a volume of liquid, those systems necessarily deliver foam to the interior of a tank at the upper portion thereof such that at least a majority of aquatic animals stored in the tank are submerged in foam. In order to rely on a theory of inherency, the function or feature asserted to be inherent in the cited reference must necessarily result from the structure described in the reference. For the reasons discussed above, it should now be clear that the function provided by the foam delivering means of the applicants' claimed apparatus is not necessarily performed by either the Robohm

apparatus or the system of Smolski because both of those references describe systems of oxygenating or aerating a body of liquid. The examiner has not provided any technical explanation of why either the Robohm apparatus of the Smolski system necessarily perform the identical function performed by the foam delivering means of the applicants' claimed apparatus.

For all of the foregoing reasons, the rejection of Claim 27 under 35 USC 103(a) is not supported by substantial evidence of unpatentability. Therefore, the rejection is improper and should be withdrawn.

Claims 28-34 depend from Claim 27 either directly or indirectly and thus, include all of the features of Claim 27. Therefore, Claims 28-34 are allowable for at least the same reasons as Claim 27.

35 USC 103(a): Claims 29 and 32

The examiner rejected Claims 29 and 32 under 35 USC 103(a) as being unpatentable over Robohm and Smolski as applied to Claim 28 and further in view of US 1,616,125 (Holman). Claims 29 and 32 depend from Claim 27 and thus, include all of the features and functions of Claim 27. Holman does not teach the function of the foam delivering means of the applicants' claimed apparatus as set forth in Claim 27 that is missing from the Robohm and Smolski. More specifically, Holman does not teach an apparatus that has means for delivering foam to an upper region of a tank, so aquatic animals are submerged in foam. The gas discharging means 18 is provided in the base of the tank and delivers oxygen into the bottom of a volume of water that fully occupies a tank. Holman describes that only a small flow of oxygen is delivered into the tank (see page 2, lines 40-44 ("As this has heretofore been practiced, it is preferred during transportation and use of this device to maintain constantly a small flow of gas to the casing interior.")) For the same reasons as outlined above, the system shown and described in Holman does not inherently deliver foam for submerging aquatic animals. Accordingly, Claims 29 and 32 are allowable for at least the same reasons as Claim 27.

35 USC 102(b): Claims 35-38

The examiner rejected claims 35-38 under 35 USC 102(b) as being barred over US 2005/0076848 (Lyngstad). In making this rejection the examiner asserted that Lyngstad describes and shows all of the features of the applicants' claimed apparatus as set forth in Claim 35.

As a preliminary matter, it is noted that Lyngstad was not published more than one year before the priority date of the present application. Lyngstad was published on April 14, 2005. The present application is the US national phase of an international application that was filed on December 7, 2004 and claims a priority date of December 9, 2003. Therefore, the rejection based on section 102(b) is improper.

Nevertheless, the applicants have noted that Lyngstad has an effective filing date of September 19, 2002, which is before the applicants' New Zealand priority date. Since Lyngstad is the US national stage of an international application that was published in English and the US patent application publication date is after applicants' priority date, Lyngstad may be available as a reference under 35 USC 102(e). Accordingly, the applicants will respond to this rejection as if it was based on Section 102(e).

Lyngstad describes and shows a water storage tank that is completely filled with water. Thus, Lyngstad discloses an apparatus for storing aquatic animals in water, not foam as called for in the applicants' claimed apparatus. The fish transport system described in Lyngstad is explicitly designed to eliminate sloshing of water. Therefore, the Lyngstad transport system does not provide a significant amount free air space at the top of the tank. In the applicants' claimed apparatus such an air space is necessary because the foam generated or delivered covers at least a majority of the aquatic animals that may be stored in the tank.

The examiner refers to components 49, 50, 54, 58, 68, 70, 72, 74, 76, 78, and 80 in Lyngstad and characterizes those components as means for:

> . . . recirculating fluid from a lower region of the interior of the tank in which the aquatic animals are stored to an upper region of the interior of the tank, such that the fluid passes over at least a majority of the aquatic animals when stored in the tank and the natural proteins of the aquatic animals create a foam (it is inherently [sic] that aquatic animals such as bivalves produce/release some sort of natural proteins in a

> form of foam) as the fluid is recirculated, whereby at least a majority of the aquatic animals when stored in the tank are submerged in foam.

However, those components are not and should not be considered to be "means for recirculating fluid from a lower region of the interior of the tank ... to an upper region of the interior of the tank" as set forth in Claim 35. Components 46 and 48 are for cooling the water in the tank, components 50, 52, 68 and 70 are for supplying oxygen to the water, components 54, 56, 76 and 78 are for adjusting the salt component of the water, and the components 58, 60, 62 and 80 are for monitoring water quality.

More specifically, pump 44 is positioned to provide lateral water flow in the upper portion of the tank so that "the fish will by nature be attracted to stand in the upper layer of the water, where the water flow is the greatest, so that the fish will get natural exercise" (See, Lyngstad at paragraph [0037]). This system will not function in a foam environment, as mechanical pumps cannot work effectively in a foam environment. In a low water volume, loss of prime would be a major risk and if the tank and recirculating means were not completely filled with water/liquid, it would not be possible for the fish to be pumped and swim through the system, as described in Lyngstad.

Additionally, a liquid transport system such as that described in Lyngstad does not have a large free air space that could be filled with foam. The free surface effect during motion is hazardous to the fish and potentially dangerous for the truck or vessel hauling the fish. Thus such a system typically has small central vents with the tank being completely filled. Such systems also use antifoams to ensure that the tank does not contain substantial air/foam. Indeed, Lyngstad states at paragraph [0035] that the system is preferably completely filled with water: "To reduce the slopping around of water during transport, so that the fish 18 are thriving better, the storage container 14 is preferably completely filled with water 16." Free surface effects in transportation tanks are undesirable, because large amounts of free bubbles are distressing to finfish in enclosed spaces.

The examiner alleges that natural proteins released by the aquatic animals will result in the animals being stored in foam in Lyngstad's apparatus. This is not correct. Any natural proteins released by the aquatic animals in a water environment will be diluted by the water,

and any gas will rise to the top of the tank, so even if foam were created, it would be on the surface, out of contact with the animals, and therefore the majority of animals would not be submerged in foam. Further, Lyngstad at paragraphs [0038] – [0040] describes the use of external filtering and purifying equipment that would eliminate or minimise any foam generation.

When a claim for a combination is presented and at least one of the elements is presented as a means for performing a stated function, the examiner must cite a reference that discloses or suggests the identical function set forth in the claim in order to make out a *prima facie* case of unpatentability of the claimed combination under Section 102. In Claim 35 the claimed function is "recirculating fluid from a lower region of the interior of the tank in which the aquatic animals are stored to an upper region of the interior of the tank, such that the fluid passes over at least a majority of the aquatic animals when stored in the tank and the natural proteins of the aquatic animals create a foam as the fluid is recirculated, whereby at least a majority of the aquatic animals when stored in the tank are submerged in foam." The identical function is not expressly described in Lyngstad. Therefore, it appears that the examiner is relying on a theory of inherency, i.e., that because Lyngstad describes a system having a circulation pump (44) and a means (50, 52, 70, 72, and 74) for supplying oxygen to the water inside the tank that the Lyngstad device necessarily delivers foam to the interior of the tank at the upper portion thereof such that at least a majority of aquatic animals stored in the tank are submerged in foam. In order to rely on a theory of inherency, the function or feature asserted to be inherent in the cited reference must necessarily result from the structure described in the reference. For the reasons discussed above, it should now be clear that the function provided by the fluid recirculating means of the applicants' claimed apparatus as set forth in Claim 35 is not necessarily performed by the Lyngstad device.

For all of the foregoing reasons, Lyngstad does not anticipate the applicant's claimed apparatus as set forth in Claim 35. Accordingly, a rejection under 35 USC 102 is not supported by substantial evidence of unpatentability. Since the existing rejection is improper and the implied rejection is improper, the rejection of Claim 35 based on lack of novelty in view of Lyngstad should be withdrawn.

Claim 36 depends from Claim 35 and thus, includes all of the features and functions set forth in Claim 35. Therefore, Claim 36 is not anticipated by Lyngstad for at least the same reasons discussed above for Claim 35. Further, for Claim 36, the examiner asserts that Lyngstad teaches means for injecting gas/air into a recirculating means such that foam is generated in the recirculating means. The examiner has misinterpreted Lyngstad. The device shown and described in Lyngstad includes an oxygen dosing system that consists of pipe 50, coupling 52, hose 68, and oxygen supply system 70. The objective of that system is to eliminate bubbles reaching the water surface and wasting oxygen and to ensure that all the oxygen is absorbed into the water with no excess vented to waste. The arrangement described in Lyngstad results in optimum use of bottled or liquid oxygen – free bubbles are actively discouraged. Therefore, Lyngstad does not teach a means of generating foam in a recirculating means. To the contrary, Lyngstad teaches a means for eliminating or minimizing bubbles in a fish transport tank having a liquid recirculating system.

Claims 37 and 38 depend from Claim 35 indirectly through Claim 36 and thus, include all of the features and functions of Claims 35 and 36. Therefore, Claims 37 and 38 are not anticipated by Lyngstad for at least the reasons discussed above relative to Claims 35 and 36.

35 USC 103(a): Claim 39

The examiner rejected Claim 39 under 35 USC 103(a) as being unpatentable over Lyngstad. Claim 39 depends from Claim 35 indirectly through Claim 36 and thus, includes all of the features and functions of Claims 35 and 36. For the reasons discussed above relative to Claims 35 and 36, the applicants' claimed apparatus as set forth in Claim 39 is not obvious in view of Lyngstad. Claim 39 is novel and inventive over Lyngstad for at least the same reasons as Claim 35. Further, as pointed out above, Lyngstad uses external filtering and purifying equipment which would counter the generation of foam in the transport tank. Accordingly, the rejection of Claim 39 under 35 USC 103(a) is improper and should be withdrawn.

Claims 40-52

Claim 40 depends from Claim 27 and is directed to a method of using the applicant's claimed apparatus as set forth in Claim 27. Therefore, Claim 40 includes all of the functions and

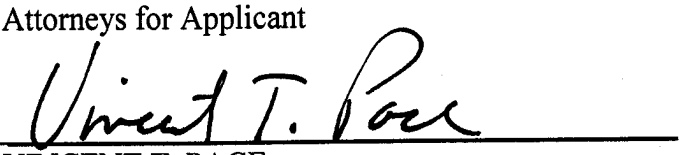
features of Claim 27 and thus, is allowable for at least the same reasons as Claim 27. Claims 41-47 depend from Claim 40 either directly or indirectly and thus, include all of the features and functions of Claim 40. Therefore, Claims 41-47 are allowable for at least the same reasons as Claim 40 upon rejoinder.

Claim 48 depends from Claim 35 and is directed to a method of using the applicant's claimed apparatus as set forth in Claim 35. Therefore, Claim 48 includes all of the functions and features of Claim 35 and thus, is allowable for at least the same reasons as Claim 35. Claims 49-52 depend from Claim 48 either directly or indirectly and thus, include all of the features and functions of Claim 48. Therefore, Claims 49-52 are allowable for at least the same reasons as Claim 48 upon rejoinder.

CONCLUSION

The Applicants respectfully request that the Examiner reconsider the application in the light of the foregoing amendments and remarks. It is believed that the claims as now presented are in condition for allowance.

Respectfully submitted,
DANN, DORFMAN, HERRELL AND SKILLMAN
A Professional Corporation
Attorneys for Applicant

By 
VINCENT T. PACE
PTO Registration No. 31,049

Tel.: 215-563-4100
Fax: 215-563-4044
E-mail: **vpace@ddhs.com**